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Implementation of E-Modules to Support the Teaching and Learning Process at PKBM Sarana Maju, Tegal City

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Abstract

The Community Learning Activity Center (PKBM) is a non-formal education institution that plays a vital role in improving the quality of life through relevant and high-quality educational programs. In Tegal City, PKBM Sarana Maju is one of the active PKBMs committed to providing educational solutions for people from diverse backgrounds. One of the initiatives implemented is the use of E-Modules as a learning medium. The use of E-Modules aims to overcome technical barriers and provide flexibility in the teaching and learning process, enabling broader and more effective outreach to learners. This implementation, however, presents challenges such as technical difficulties faced by tutors and learners. To optimize the utilization of E-Modules, it is recommended that PKBM provides a support team to offer technical assistance, such as customer support services or online forums. Thus, E-Modules can serve not only as a learning aid but also as a means to significantly increase community learning participation. This study provides insights into the importance of technological adaptation in non-formal education to support the achievement of inclusive and quality learning objectives.

***Keywords**: Learning, E-Modules, Non-Formal Education, PKBM, Educational Technology.*

1. Introduction

Education in Indonesia encompasses all forms of structured and unstructured education provided within the country. This system is overseen by the Ministry of Education and Culture of the Republic of Indonesia (Kemdikbud), formerly known as the National Education Department (Depdiknas). Basic education is a mandatory right for every Indonesian citizen, lasting six years in elementary school (madrasah ibtidaiyah) and three years in junior high school (madrasah tsanawiyah). The National Education System is regulated by Law Number 20 of 2003, which outlines the structure and goals of education in Indonesia. Education in the country is divided into three main pathways: formal, non-formal, and informal [1]. It also spans four levels: early childhood, basic, secondary, and higher education. Education plays a crucial role in developing human resources, making it a cornerstone for national development. Indonesia's education system has undergone numerous transformations in response to globalization. These changes aim to discover the most effective approaches to advancing Indonesian society. Education is a lifelong process of acquiring knowledge in all settings and situations that positively influence individual growth [2]. Despite its importance, many Indonesians still lack a comprehensive understanding of education. Some perceive it as time-consuming and effort-intensive. Various factors, such as age, work commitments, marital status, or mental health challenges, prevent individuals from pursuing further education. In response, communities have sought alternative solutions, such as non-formal education, which is flexible and accessible to people of all ages and backgrounds.

One prominent example of non-formal education in Indonesia is the Community Learning Activity Center (PKBM). PKBM is an organization providing non-formal education programs tailored to community needs, initiated and managed by the community [3]. In Tegal City, numerous PKBMs operate actively and officially, including PKBM Sarana Maju. This institution aims to enhance the quality of life through high-quality, inclusive education. It welcomes learners from diverse backgrounds, including older adults, homemakers, individuals with mental health challenges, and those who faced difficulties in formal education. PKBM Sarana Maju also caters to employees seeking personal development without compromising their work commitments. Since its inception, PKBM Sarana Maju primarily relied on printed learning modules to deliver educational content [4]. These conventional modules are simple and distributed in physical formats. While they are easy to distribute and do not require digital devices or internet access, printed modules have limitations. Learners can only access them in specific locations, such as libraries or PKBM study rooms, reducing accessibility. Additionally, printed materials lack interactivity and incur significant printing and distribution costs, which can strain both PKBM and learners with limited budgets. To address these challenges, modern learning methods must be adopted. One effective solution is the use of electronic modules (e-modules) [5].

E-modules are digital learning resources comprising lesson content, learning strategies, and evaluation steps systematically designed to meet electronic curriculum standards. E-modules are accessible through digital devices such as computers, tablets, or smartphones. Their primary advantage lies in their flexibility, allowing learners to access materials anytime and anywhere [6]. Unlike printed modules, e-modules do not incur printing or shipping costs. They can also be designed with customized themes or colors to suit learners' preferences, making the content more engaging and enhancing motivation. Furthermore, e-modules can be easily updated to align with the latest

curriculum or developments, ensuring relevant and high-quality learning experiences. Despite their numerous advantages, implementing e-modules in non-formal education at PKBM presents challenges. Many PKBM staff lack digital literacy, and there is limited awareness regarding the benefits of technology integration. Transitioning from printed to electronic modules requires training for both PKBM staff and learners to optimize the use of this technology [7]. Thus, researching the impact of e-modules in PKBM is essential. This includes exploring the implementation of e-modules as a learning medium, their strengths and weaknesses, tutors' and learners' perceptions of their use, challenges faced during implementation, and strategies to enhance learner access to e-modules. Consequently, this study focuses on the application of e-modules in teaching and learning activities at PKBM Sarana Maju, Tegal City [8]. The research aims to evaluate the effectiveness of e-modules in this setting. The study raises several key questions: How are e-modules implemented as a learning medium at PKBM Sarana Maju? What are the strengths and weaknesses of e-modules in this context? What are the perceptions of tutors and learners regarding e-modules? What factors hinder the implementation of e-modules, including technological, infrastructural, and user skill challenges? How can learner access to e-modules be improved? These questions guide the research objectives and underline its significance.

The study aims to describe the use of e-modules as a learning medium at PKBM Sarana Maju and identify their advantages and disadvantages. It also seeks to understand tutors' and learners' perceptions of e-modules, including their benefits, usability, and challenges. Furthermore, the research identifies barriers to e-module implementation, such as technological, infrastructural, and user competency issues. Finally, it proposes strategies to enhance learner access to e-modules, making them more accessible and optimally utilized. The research offers multiple benefits. For the researcher, it provides an opportunity to enhance analytical and research skills while gaining new insights. It also allows for in-depth exploration of field practices related to informatics management and digital media. For readers, the study provides valuable information for understanding digital media and serves as a reference for further research. Additionally, it raises awareness of the rapid technological advancements in digital media. For institutions, the research introduces PKBM Sarana Maju to a broader audience, provides constructive feedback for development, and promotes the potential of non-formal education in Indonesia.

2. Research Methodology

Research methodology refers to the procedures employed by researchers to gather the required data or information for their studies. This research adopts a qualitative approach. Qualitative research aims to understand phenomena experienced by research subjects, including behaviors, perceptions, motivations, and actions, in a comprehensive manner [9]. It is presented descriptively in natural language and conducted using various naturalistic methods. In this study, data collection was conducted through several methods. The first method was observation, defined as direct observation using sight, smell, hearing, and touch. The researcher conducted direct observations at the Community Learning Activity Center (PKBM) Sarana Maju in Tegal City, focusing on staff, teachers, and learners. The purpose of these observations was to gather data and information about the most effective ways to develop the use of e-modules at the institution. The observation process included learning activities conducted by teachers and learners at PKBM Sarana Maju [10].

Additionally, interviews were conducted as part of the data collection process. Interviews are a method of obtaining data through face-to-face communication or direct question-and-answer sessions with data sources. In this study, interviews were conducted with the head of the institution, staff, teachers, and learners at PKBM Sarana Maju in Tegal City. The purpose was to gain in-depth insights into the challenges faced in the learning process, particularly those related to the lack of digital technology utilization.
The documentation method was also employed in this research. Documentation as a systematic activity of searching, utilizing, investigating, compiling, and providing documents to obtain information, knowledge, or evidence. Documentation in this study involved examining the availability of facilities and infrastructure at PKBM Sarana Maju, interactions between teachers and learners, and learning outcomes that support the research data. Lastly, the study utilized the library research method. Library research as a method for exploring existing information and data, particularly documents or records related to learning. The researcher consulted various sources such as books, journals, online resources, and prior research references to provide a solid foundation for this study. These methods were applied to obtain accurate and in-depth data, offering a comprehensive picture of the implementation of e-modules at PKBM Sarana Maju in Tegal City.

3. Result and Discussion

In this study, the implementation of e-modules at PKBM Sarana Maju Kota Tegal has shown a significant impact on the teaching and learning process. E-modules, as a form of digital learning media, provide ease of access and flexibility for learners. In general, e-modules facilitate more independent learning by providing materials that can be accessed anytime and anywhere. This is highly relevant to the needs of learners, who are often hindered by time and space limitations to attend formal learning activities. Based on the research conducted, it was found that the use of e-modules was effective in increasing motivation and participation among learners, although some challenges had to be faced during its implementation. One of the main advantages of e-module implementation is its ease of access. Learners can easily access learning materials through the computers or smartphones they own. Who stated that e-modules provide ease in accessing learning materials flexibly. By using e-modules, learners are not bound by class schedules or specific locations, which often pose barriers in conventional learning. Furthermore, e-modules also allow for more interactive learning, which can help learners understand the material better.

However, despite its many advantages, there are several challenges faced during the implementation of e-modules. One of the main challenges is the limited access to the internet in some areas, which can hinder the learning process. Some tutors also consider e-modules inefficient because they rely on a stable internet connection. This can be a barrier, especially if the learners or tutors are located in areas with poor internet quality. However, a proposed solution to overcome this issue is by installing Wi-Fi networks in the learning areas, so access to e-modules can be done more smoothly. In addition, there are also challenges related to tutors' understanding and use of e-modules. Some tutors are not fully familiar with or accustomed to using e-modules, so they still rely on textbooks as the primary medium for teaching. This shows that the adaptation process to digital technology in non-formal education, as seen in PKBM Sarana Maju, requires sufficient time and training. Therefore, there is a need for training for tutors so they can fully optimize the use of e-modules in the learning activities.

The flow of using the e-module website also influences the effectiveness of its implementation. Based on the data obtained, the process of accessing the Kemendikbud e-module website is relatively easy to follow, although there are several steps that need to be followed, such as ensuring a secure internet connection and selecting the appropriate module category based on the learning needs. This shows that although the e-module has a user-friendly interface, learners and tutors still need a good understanding to maximize its use. Additionally, technical obstacles such as difficulties in accessing the website or internet connection disruptions can also affect the user experience.
It is important to note that e-modules are not only used as teaching materials but also as tools that help improve the quality of learning. The interactive features available in e-modules allow learners to study independently with minimal guidance from tutors. This self-paced learning is crucial for non-formal education, where time and teacher availability are often limited. The presence of e-modules provides a solution to these issues by offering learning materials that can be studied anytime and anywhere, based on each individual's needs. However, it cannot be denied that e-modules also have some drawbacks. One of them is the limitation in terms of the materials available. Some subjects or topics still rely on textbooks as the primary source of learning, which reduces the flexibility of using e-modules. To improve the effectiveness of e-modules, there needs to be development of more complete and relevant materials that meet the needs of learners at PKBM Sarana Maju Kota Tegal. This development should also consider various aspects such as the difficulty level of the materials and their relevance to the existing non-formal education curriculum.

Furthermore, although e-modules allow for more flexible learning, there are still challenges related to learning motivation. Some learners find it difficult to stay focused and consistent when learning independently. Therefore, it is important for tutors to provide sufficient support and motivation to ensure that learners do not feel isolated during the learning process. In this regard, the role of the tutor as a facilitator is crucial to ensuring that learning through e-modules remains effective. The implementation of e-modules at PKBM Sarana Maju Kota Tegal has also had a positive impact on the quality of non-formal education. With the presence of e-modules, the learning process becomes more efficient and can be accessed by a larger number of learners. This is in line with the goals of PKBM Sarana Maju to provide more equitable and accessible education to the community. However, continuous evaluation and improvement are needed in the use of e-modules to ensure that this learning media can provide maximum benefits for the learners. Overall, the implementation of e-modules at PKBM Sarana Maju Kota Tegal shows positive results in improving the quality of learning. Although there are some challenges, such as limited internet access and tutors' understanding, e-modules still provide a solution to the existing problems in non-formal learning. With the development and improvement of e-module usage, it is hoped that e-modules can become a more effective tool in supporting the teaching and learning process in the future.

3.1. Flow of Document

This flow of document describes the process of using the e-module in the teaching and learning process at PKBM Sarana Maju Kota Tegal, as well as its evaluation system, starting from accessing the e-module website to the systematic report of the assessment submitted to the head of PKBM. This process aims to provide a clear picture of how the e-module is used by learners and how their learning outcomes are evaluated. Each step in this flow plays an important role in ensuring that the learning process is effective and aligns with the expected objectives. The first step in this flow is the preparation of materials by the tutor. Before the materials are delivered to the learners, the tutor first prepares the teaching materials that will be used in the e-module. This process involves adjusting the materials to the applicable curriculum and the learners' competency needs. Proper preparation is essential to ensure that the materials presented are easy to understand and relevant to the learning objectives. With proper preparation, the e-module can be more effective in supporting the teaching and learning process. This step is crucial because the quality of the materials prepared will greatly affect the success of the learning process. Once the materials are prepared, the next step is for the learners to access the e-module. Learners can access the e-module through devices provided by PKBM or their personal devices. At this stage, learners are expected to understand the content in the e-module independently. This self-directed learning is one of the main objectives of using the e-module, as each learner can learn at their own pace and time. This easy and flexible access allows learners to review the materials anytime if necessary, so they can maximize their understanding of the lessons presented.

Although the e-module allows for self-directed learning, not all learners can immediately comprehend the material with ease. Therefore, the next step in the flow is the explanation of the material by the tutor. The tutor provides additional explanations through face-to-face or online sessions to assist learners who are having difficulty understanding the content. These additional explanations are very useful, especially for learners who struggle with certain concepts in the e-module. With the tutor's assistance, learners can better understand and clarify the material. This interaction also allows learners to ask questions directly if there are parts of the material they do not understand.
After the material has been understood, the next step is the creation and completion of assignments. The tutor creates assignments based on the materials that have been delivered, and these assignments serve as a way to evaluate the learners' understanding. Learners then complete the tasks as a form of application of the material they have learned. These assignments can be submitted via digital platforms or directly, depending on the system implemented by PKBM. Completing the assignment not only tests the learners' understanding but also gives them the opportunity to develop skills relevant to the material learned. Once the assignments are completed, the next step is the assessment by the tutor. The tutor evaluates the assignments submitted by the learners to determine their understanding of the material. This assessment is crucial because it provides insight into the success of the learning process that has been carried out. The results of this assessment also serve as feedback for the learners, which will help them improve their understanding and skills in the future. The assessment should be objective and fair, covering various aspects relevant to the learning objectives.

After the assessment is complete, the tutor compiles the scores and prepares the learning report. This report contains a summary of the learners' learning outcomes, including evaluations of individual progress. The report is then submitted to the head of the PKBM as a form of overall evaluation of the learning process. The score compilation and report are vital to ensure that the entire learning process is accountable, and the results can be analyzed for future improvements. The final step in this flow is the evaluation conducted by the head of PKBM. The head of PKBM reviews the report submitted by the tutor to evaluate the overall learning process. This evaluation includes aspects such as the effectiveness of the e-module usage, the teaching strategies applied by the tutor, and the quality of the materials in the e-module. Based on this evaluation, the head of PKBM provides feedback to the tutor regarding teaching strategies and the preparation of

modules in the future. This evaluation is an important step in improving the quality of learning and ensuring that the e-module can continue to be used effectively in the teaching and learning process. With this flow of document, it is hoped that all parties involved in the learning process at PKBM Sarana Maju Kota Tegal can understand the systematic use of the e-module. Each step, from material preparation to final evaluation, aims to improve the effectiveness of learning and support the success of the learners. Through this flow, it is expected that PKBM Sarana Maju can enhance the quality of learning and contribute more significantly to non-formal education in Kota Tegal. Overall, this systematic flow reflects the importance of coordination between the tutor, learners, and the head of PKBM to ensure that the e-module-based learning process runs smoothly. With continuous evaluation, it is hoped that the use of the e-module can continue to develop and provide greater benefits for learners, as well as improve the quality of education at PKBM Sarana Maju Kota Tegal.

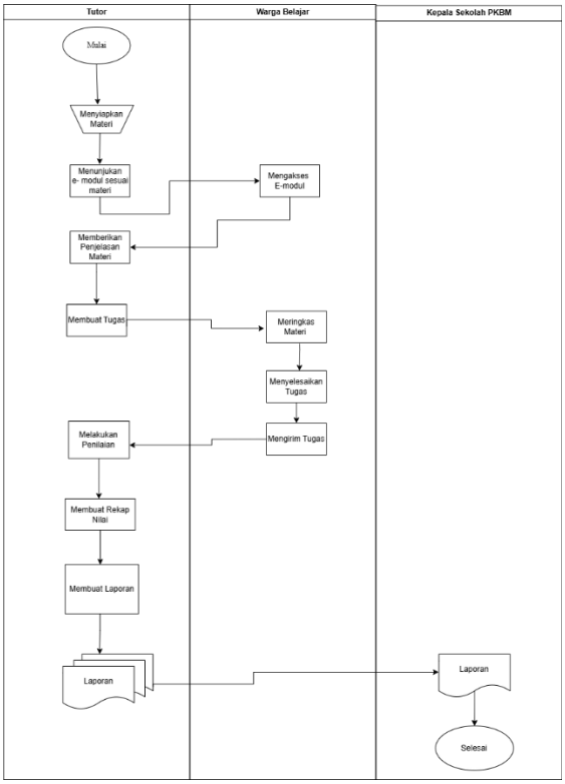

Fig. 1: Flow Of Document

3.2. The Advantages and Disadvantages of E-module Implementation.

One of the main advantages of implementing e-modules in education is the flexibility it offers. E-modules allow learners to access learning materials anytime and anywhere, whether through a computer or mobile device. This flexibility is particularly beneficial for learners who have other commitments, such as work or family responsibilities, as it removes the constraints of time and location. It also allows learners to adjust their learning pace according to their needs, which aligns with the concept of self-paced learning. This approach enables learners to better understand the material in a way that suits their learning rhythm and personal schedule. Another advantage is the increased engagement of learners in the learning process. E-modules, equipped with various media such as text, images, audio, videos, and quizzes, can enhance interactivity and make learning more engaging. The use of diverse media makes the learning process more dynamic and avoids monotony. Learners can benefit not only from written text but also from visualizing the material through animations or educational videos, which can be easier to understand. Features like quizzes and practice tests allow learners to assess their own comprehension directly, providing immediate and constructive feedback that can help improve their understanding. Additionally, e-modules provide structured access to learning materials. These modules are typically organized into related subtopics, allowing learners to follow the lessons in a clear and organized manner. This structure not only enhances understanding but also helps learners identify parts of the material that may require further study. With a clear structure, learners can easily access topics that are relevant to their needs, making the learning process more focused and goal-oriented.

Another key advantage is the enhancement of learners' digital skills. As technology continues to play a significant role in daily life, digital literacy has become increasingly important. By using e-modules, learners are not only gaining academic knowledge but are also improving their digital skills. They learn how to operate digital devices and navigate technology-based learning platforms, which adds value for learners who may not have been familiar with technology before. Therefore, e-modules not only offer benefits in terms of academic learning but also help learners adapt to the rapid technological advancements in society. Furthermore, e-modules facilitate the monitoring and evaluation of learners' progress. Many e-modules come equipped with features that allow tutors to track learners' performance, such as quiz results or completed assignments. This tracking feature enables tutors to provide quick and targeted feedback, helping learners address mistakes or reinforce their understanding more effectively. By offering timely insights into learners' progress, tutors can support them in overcoming challenges and mastering the material faster.

Despite the numerous advantages, the implementation of e-modules does have some drawbacks that need to be addressed. One of the main challenges is the limitation of access to technology. Not all learners at PKBM Sarana Maju have access to adequate electronic devices, such as computers or smartphones, required to access e-modules. Additionally, the quality and stability of internet connections are not

uniform, especially in rural areas, which can hinder the smooth learning experience for learners who do not have reliable access to technology. To overcome this, efforts should be made to improve access to devices and provide better internet connectivity for learners. Another challenge is the limited digital skills of some learners. Many learners may not be accustomed to using technology or digital devices. For those who are unfamiliar with the internet or web-based or mobile applications, using e-modules could present difficulties. This lack of digital literacy can hinder learners from fully accessing and utilizing e-modules. As a solution, basic training to improve digital literacy should be provided, so that learners can more easily take advantage of e-modules as an effective learning tool. The lack of social interaction is also a disadvantage in e-module-based learning. E-modules tend to be more individualistic and less interactive than face-to-face learning.

While e-modules provide features such as online discussions or forums, deeper social interactions, such as live discussions or Q&A sessions, may be limited. This reduces opportunities for learners to engage in direct communication with tutors or classmates, which can affect the development of their communication skills. More interactive and collaborative learning environments can motivate learners to engage more actively in the learning process. Another challenge in e-module implementation is the creation and maintenance of content. While e-modules allow materials to be organized in a structured manner, creating content that meets the needs of learners can be difficult. Irrelevant or unengaging material can cause learners to lose interest in learning. Therefore, it is essential to ensure that the content provided is relevant and appealing to learners. Additionally, e-modules require regular maintenance to ensure the material remains up-to-date and relevant. Without proper maintenance, e-modules can become outdated and less effective, requiring periodic updates. Finally, the success of e-modules heavily depends on the supporting technological infrastructure. Adequate infrastructure, such as servers capable of handling large amounts of data and providing fast and stable access, is crucial for the smooth delivery of e-modules. If the infrastructure is insufficient, e-modules may not be accessible or may provide a poor user experience, reducing the effectiveness of the learning process. Therefore, investments in robust technological infrastructure are essential to ensure that e-modules can be accessed effectively by all learners without technical issues.

3.3 Procedure for Using E-Modules

After discussing the advantages and challenges of using e-modules, it is important to understand the access procedure that can assist users in utilizing the e-modules effectively. Based on the observations, the following steps can be followed by learners to access the Kemendikbud e-module website:

1. **Open the internet browser you typically use**, such as Google Chrome, Mozilla Firefox, Safari, or Microsoft Edge.

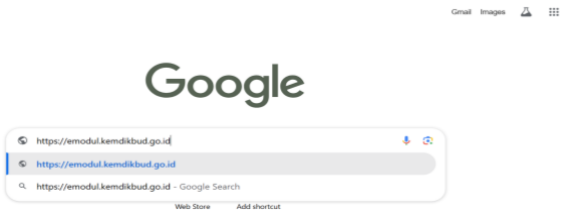

Fig. 2: Google Browser Display

2. **Type the e-module website address in the browser's address bar**: https://emodul.kemdikbud.go.id
3. **If a message appears saying "your connection is not private," select the "advanced" menu.**

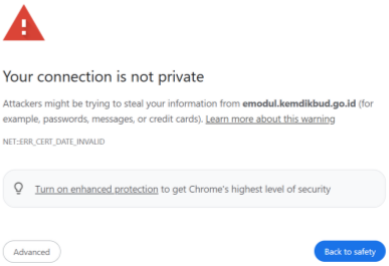

Fig. 3: Website Access Step

4. **Then select "proceed to emodul.kemdikbud.go.id"** to continue.

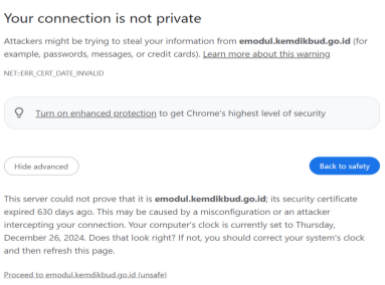

Fig. 4: Website Access Step

5. **Once the Kemendikbud e-module website opens**, you will see the main display, which presents various learning materials in the e-module format.

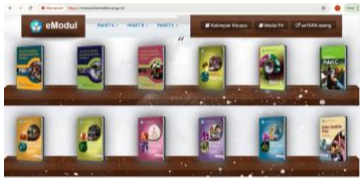

Fig. 5. Main Website Display

6. **On the main page**, you will see various learning module categories available, such as:
    a. Modules for Elementary School (SD)
    b. Modules for Junior High School (SMP)
    c. Modules for Senior High School (SMA)
    d. Modules for Paket A/B/C Education

Fig. 6: E-Module Selection Display

7. **Choose the appropriate category based on the education level or topic you wish to study**, then click the category to proceed to the next step.

Fig.7: E-Module Class Display

8. **Click on the module title you want** to see more details about the material and instructions in the e-module.

Fig.8: Download or Read E-Module Display

9. **Then click "read" or "download"** to begin using the e-module.

4. Conclusion

Based on the discussion in the study regarding the implementation of e-modules at PKBM Sarana Maju Kota Tegal, several key points can be concluded as follows. The use of e-modules at PKBM Sarana Maju has provided an innovative solution in supporting the teaching and learning process, especially in facilitating learners to access learning materials with high flexibility. The digital-based e-module allows learners to access materials anytime and anywhere, whether through computers or mobile devices. As a result, the learning process becomes more accessible and is no longer bound by time and place, which is beneficial for learners with limited time. The implementation of e-modules at PKBM Sarana Maju Kota Tegal has gone through several important stages that support its success. These stages include the preparation of content that meets the learning needs, training for tutors to manage and utilize e-modules, and socialization to learners so that they can optimally use the e-modules. All these stages help facilitate the implementation process and ensure that the materials delivered can be well understood by the learners, ultimately enhancing the quality of education. The advantages of the e-modules implemented at PKBM Sarana Maju are clearly visible, especially in terms of learning flexibility. The e-module allows learners to study at their own pace, supporting the concept of self-directed learning. Additionally, the interactive features of the e-module, such as quizzes, educational videos, and images, can increase learner engagement, making the learning process more interesting and interactive. Moreover, e-modules also provide ease in tracking the learning progress of the learners in real-time, allowing tutors to provide quick and accurate feedback.

However, despite the many advantages, the implementation of e-modules is not without its challenges. One of the main obstacles is the limited access to technology, especially electronic devices and stable internet connections. Not all learners at PKBM Sarana Maju have adequate devices to access the e-modules, which becomes a barrier in the learning process. Additionally, the low digital literacy among learners and tutors also poses a problem that needs to be addressed promptly. Without sufficient digital skills, learners will find it difficult

to fully utilize the e-modules. Another challenge is the limited social interaction that occurs in e-module-based learning. E-learning tends to be more individualistic and is not as interactive as face-to-face learning. Although there are online discussion features and forums, deeper social interactions, such as direct discussions or Q&A sessions, are still limited. This can reduce opportunities for learners to interact directly with tutors or fellow learners, which may impact the development of their communication skills. Nonetheless, the overall perception of tutors and learners regarding the use of e-modules is generally positive. Tutors feel that e-modules help them manage learning more effectively and deliver materials in a more structured way. Meanwhile, learners appreciate the flexibility and interactivity offered by e-modules, although some of them face difficulties in accessing technology or understanding the features of the e-modules. Therefore, additional guidance is necessary to ensure that all learners can fully benefit from the e-modules.

Furthermore, some of the main challenges in the implementation of e-modules include insufficient devices, unstable internet connections, a lack of training for tutors and learners, and content designs that are sometimes not engaging or interactive enough. Addressing these issues requires continuous infrastructure support and digital literacy training. To improve learners' access to e-modules, PKBM Sarana Maju has provided computer labs with internet access, as well as offline versions of e-modules for learners who do not have adequate devices or stable internet connections. These efforts have helped reduce the technological gap in the learning process. Overall, it can be concluded that the implementation of e-modules at PKBM Sarana Maju Kota Tegal has had a positive impact on improving the quality of education, although there are still several challenges that need to be addressed. To enhance the effectiveness of e-module usage, it is important for PKBM Sarana Maju to continue maintaining and updating content, as well as improving digital literacy among both learners and tutors. Additionally, providing adequate infrastructure and ongoing training is crucial to support the smooth implementation of e-module-based learning. In conclusion, the use of e-modules at PKBM Sarana Maju Kota Tegal presents significant opportunities for the development of technology-based learning. With continuous improvements in infrastructure, training, and content updates, e-modules can become an effective tool in supporting a more flexible, interactive, and quality learning process.

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